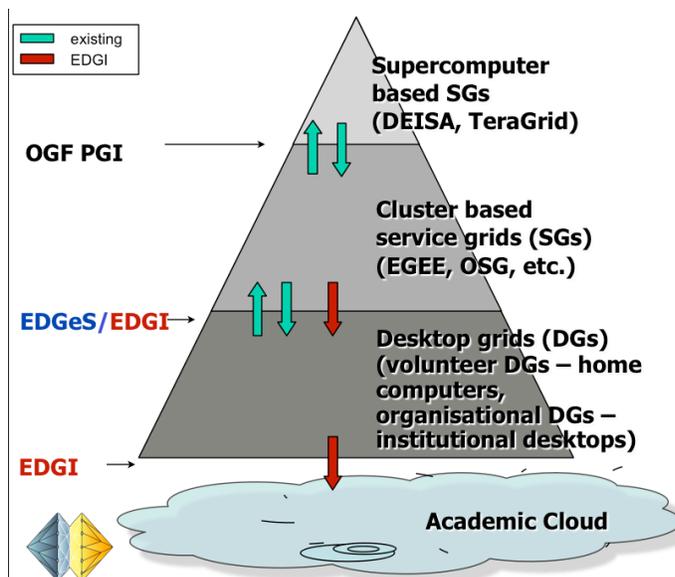




EDGI

Summary: EDGI will develop middleware that consolidates the results achieved in the EDGeS project concerning the extension of Service Grids with Desktop Grids (DGs) in order to support European Grid Initiative (EGI) and National Grid Initiative user communities that are heavy users of Distributed Computing Infrastructures (DCIs) and require extremely large number of CPUs and cores. EDGI will go beyond existing DCIs that are typically cluster Grids and supercomputer Grids, and will extend them with public and institutional Desktop Grids and Clouds. EDGI will integrate software components of ARC, gLite, Unicore, BOINC, XWHEP, 3G Bridge, and Cloud middleware such as OpenNebula and Eucalyptus into SG-DG-Cloud platforms for service provision and as a result EDGI will extend ARC, gLite and Unicore Grids with volunteer and institutional DG systems.



EDGI will develop DG-Cloud bridge middleware with the goal to get instantly available additional resources for DG systems if the application has some QoS requirements that could not be satisfied by the available resources of the DG system. EDGI will improve Desktop Grid middleware (BOINC and XtremWeb^{HEP-E}) in order to handle QoS requirements and the SG-DG bridge middleware in order to support data-intensive applications. EDGI will deploy a production infrastructure that integrates ARC-, gLite- and Unicore-based Grids with Desktop Grids based on the bridge middleware developed in EDGI.

The production EDGI infrastructure will also enable the dynamic, on-demand extensions of the connected Desktop Grids with Cloud resources. As such EDGI users can benefit of the versatile and flexible eco-system provided by EDGI. The EDGI production infrastructure will be offered as service for EGI and NGI user communities. It will also serve as a demonstration for NGIs to extend their eco-system with Desktop Grids and Clouds. EDGI will establish a European Desktop Grid federation to coordinate DG-related activities in Europe both for solving technical issues as well as to attract volunteer DG resource donors by disseminating results of the EDGI and EGI-related projects. The European Grid Federation and EDGI will work in strong collaboration with EGI, EMI, NorduGrid, Unicore Forum and interested NGIs.

Objectives: EDGI will develop middleware that consolidates the results achieved in the EDGeS project concerning the extension of Service Grids with Desktop Grids in order to support EGI and NGI user communities that are heavy users of DCIs and require extremely large number of CPUs and cores.

EDGI will go beyond existing DCIs that are typically cluster Grids and supercomputer Grids in the current NGIs, and will extend them with public and institutional Desktop Grids and Clouds.

Project acronym:
EDGI

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281

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FCTUC	PT
AlmereGrid	NL
UPB	DE
UCPH	DK

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Collaboration with other EC funded projects:
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EMI
IGE
StratusLab
Venus-C
DEGISCO
SHIWA
SIENA

Networking activities: EDGI Knowledge Services (dissemination, training and standardization) focuses on providing expert consulting and technical support to new communities in the adoption and customization of the EDGI services. It will disseminate the knowledge produced by the project through the organization of focused events and will train scientists in developing applications for the combined SG-DG-Clouds DCI maintained by EDGI. EDGI will also train system administrators on how to establish and run local and public DGs and how to integrate these systems into the combined EDGI DCI.

EDGI will also call for experience and expertise sharing in order to define a definitive standard to enable SG, DG and Cloud resource sharing by unifying a set of standard and immutable interfaces as well as services and protocols. NA2 will strongly collaborate with EMI in order to guarantee the interoperability between the EMI component SG middleware (gLite, Unicore, ARC) and the DGs and Clouds handled by EDGI. NA2 will also participate in the work of OGF and OGF Europe and will collaborate with SIENA to ensure the usage of standards in the EDGI bridge solutions. EDGI will organize and establish the European Grid Federation as part of the International Desktop Grid Federation.

Service activities:

1. EDGI Production DCI Service will establish and maintain the production level combined SG-DG-Clouds. It will create and maintain the EDGI Application Repository as a public service enabling to publish and share those applications that are already ported to EDGI and usable for the EDGI DCI. EDGI will install and operate a science gateway that enables NGI users to access the EDGI DCI both at the individual job and complex workflow level.

2. Test and Validation Service will provide quality assurance services for EDGI. It will create the EDGI Test infrastructure and will perform the necessary Deployment tests, Regression tests, Functional tests, Scalability tests and Stress tests concerning the middleware development lifecycle. This service is responsible to release the EDGI middleware for the EDGI Production infrastructure. It will also provide quality assurance for EDGI applications by performing the application validation procedure. Eventually, to support these activities, the service will also set up and operate the EDGI Test infrastructure and the Application Validation Infrastructure.

Joint Research activities:

1. EDGI Bridges Technologies will further develop the 3G Bridge middleware in order to improve the stability, reliability, usability, functionality, interoperability, security, management, monitoring and accounting of the EDGI production infrastructure. In order to achieve these goals 3G Bridge components will be extended with ARC, Unicore and Cloud middleware (e.g. Eucalyptus and OpenNebula) plugins that enable the interconnection of these Grids and Clouds with Desktop Grids. The P2P data management concept developed in EDGeS for Desktop Grids will be extended and improved for ensuring better quality of service for data-intensive applications.

2. QoS Support for Desktop Grids will develop QoS support for EDGI users. In order to achieve improved response time by the connected Desktop Grids DG schedulers will be re-organized according to the needs of the EDGI infrastructure. Virtualization technologies will be investigated in order to improve the security mechanism of the EDGI infrastructure. The monitoring and benchmarking facilities of EDGI will be further developed to support QoS scheduling.

User communities: EDGI will support all scientific user communities in Europe with a high-computing demand that can be solved by Desktop Grids and EDGI like infrastructures. EDGI will collaborate closely with EGI to reach the existing and new EGI user communities.

